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The Frog Genus *Diaglana*, with a Description of a New Species

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ABSTRACT: A new species of frog, *Diaglana reticulata* is described, the type locality being Cerro Arenal, Oaxaca, Mexico. *Diaglana spatulata* (Günther) from Sinaloa is redescribed, and figures of both species are given.

THE genus *Diaglana* was proposed by Cope in 1887 for *Tripriion spatulata* Günther (described in 1882), and until this time it has remained a monotypic genus. To date only six specimens of the species have been reported, all of them taken at the type locality except one, and that at no great distance from the type locality. Whether the actual range of *T. spatulata* is as restricted as collections show, is not known, but it is presumed that it is greater.

In 1940, Mr. Thomas MacDougall discovered a bromelicolus frog on the Cerro Arenal, Oaxaca, Mexico, a locality some 1,100 kilometers southeast of the present known range of *D. spatulata*, which proves to be a second species of this extraordinary genus, and is described in this paper. A redescription and figures of *Diaglana spatulata* are included, as a basis for comparison with the new form.

GENUS DIAGLENA Cope

Tripriion Günther, Ann. Mag. Nat. Hist. (5), X, 1882, p. 279, and Biol. Centrali-Americana, Rept. and Batr., 1901, p. 293. (*part.*).

Diaglana Cope, Bull. U. S. Nat. Mus., No. 32, 1887, p. 12 (Genotype *Tripriion spatulata* Günther); Boulenger, Ann. Mag. Nat. Hist., (6), VIII, No. 48, 1891, p. 456; Nieden, Das Tierreich, Lief. 46, 1923, p. 328 (including *Tetrapriion* Stejneger and Test); Kellogg, Bull. U. S. Nat. Mus., No. 160, 1932, pp. 131, 132, 137.

Description of the genus.—*Hyla*-like in general habitus save head, which is developed into a bony casque with spatulate, crenellated edge; pupil horizontal; palatine teeth posterior to choanae; vomerine

teeth present between choanae; parasphenoid teeth present, small, arranged in a median longitudinal series; tongue not or but slightly notched behind. Head with a bony casque; tympanum distinct; the canthus rostralis forming a slightly elevated ridge, the two uniting near the nostrils; anterior margin of snout shelflike, continuing back to below anterior margin of eye; snout projecting far beyond lower jaw. Limbs elongate; fingers free with widened adhesive disks; toes about one-half webbed, with slightly smaller adhesive disks; a low inner metatarsal tubercle; no outer tubercle; a tarsal fold; male with a median, subgular vocal sac; no pectoral fold; diapophyses of sacral vertebra strongly widened; outer metatarsals united; omosternum and sternum cartilaginous.

Diaglena spatulata (Günther)

(Plate IV, figs. 1, 1a, 1b, 1c; Plate V, fig. 2)

1882. *Tripriion spatulatus* Günther, Ann. Mag. Nat. Hist., (5), X, No. 58, Oct. 1882, p. 279; (type description; type locality, Presidio de Mazatlan); Boulenger, Ann. Mag. Nat. Hist., (6), VIII, No. 48, Dec., 1891, p. 456; Günther, Biologia Centrali-Americana, Rept. Batr., Dec., 1901, p. 293, pl. 74, fig. c (entire dorsal view, and lateral and ventral views of head. The figure is very misleading as regards the size of the digital disks, which are shown much too small and quite different from their actual shape). (Brief description of type, Presidio, Sinaloa, Mexico; Forrer, collector.)

1887. *Diaglena spatulata* Cope, Bull. U. S. Nat. Mus., No. 32, 1887, p. 12 (referred to a new genus); Nieden, Das Tierreich, Lief. 46, Anura I, 1923, p. 328, and figs. 263 and 264 (line drawing after Günther's figure, Biol. Cent. Amer., pl. 74, fig. c [incorrect as regards terminal disks]); Kellogg, Bull. U. S. Nat. Mus., No. 160, 1932, p. 137-138 (brief notes on the types in the British Museum, and on a specimen collected by Kusche at "Venodio," Sinaloa, 4,000 ft.); Taylor, Univ. Kansas Sci. Bull., Vol. 37, 1936 (1937), pp. 514-575 (notes on topotypic specimens).

Description of species.—EHT-HMS No. 1424, topotype, collected near Presidio (Mazatlán) on the Mazatlán river. Adult male. Vomerine teeth in two raised, somewhat triangular series lying between, but extending for about half their length behind the posterior level of the choanae, closely approximated medially and separated from the large choanae by a distance somewhat less than the diameter of one group; palatine teeth very small, lying in a slightly curved transverse series behind choanae; parasphenoid teeth in an elongate median series; vocal sac median, external, causing the skin of the throat to be greatly distended and folded.

Body elongate, slender; head with a flattened bony casque, strongly concave between eyes; in front of eyes there is a low vertical crest terminating in a slightly raised, knoblike elevation above, from which the canthus rostralis extends in a sinuous line, as a slightly raised ridge joining the one from the opposite side about the level of the nostrils, and the ridge extending forward to the tip of

the snout; the sides of the casque forms a flaring crenellated edge which tends to turn up slightly, the loreal region sloping out to the flaring edge; snout projecting far beyond the mouth, the under surface shallowly concave, but forming a ridge around edge of mouth; the edge of the casque continues as a rough, slightly elevated crest back to below the tympanum, forming an angle just anterior to the eye. The posterior rugose nuchal margin flares up slightly. The entire upper surface of the casque is sculptured with radiating grooves or short reticulated grooves. Tympanum very distinct, longer than high, preceded by a small triangular patch of soft skin; on the projecting edge of the casque at a point lateral to, and slightly in advance of the nostril, is a shallow pitlike depression lacking sculpturing; on the snout near the edge and on the edges are a few fine spinelike tubercles; the under surface is smooth anteriorly, but on the sides of the mouth it is granular or slightly spinose.

Skin of body on dorsal surface smooth, with a few large granulations below and behind tympanum; ventral surfaces from pectoral region back to thighs heavily granular.

Limbs moderately long, the tibio-tarsal articulation reaching the posterior edge of the tympanum; fingers rather short, the first somewhat opposed to the others; first with a terminal disk less than a half wider than the digit; those of other three fingers nearly as wide again as the fingers. The pads are somewhat truncate with a deep groove about their outer border, and a slight transverse groove across their posterior ventral surface; a distinct vestige of a web present between fingers, continuing along edges of fingers as slight folds; subarticular tubercles low, not especially distinct; first finger with a heavy nuptial pad, covered on the dorsal surface by a deep black-brown horny excrecence, forming usually a continuum to the base of pad; toes about half webbed, the terminal disks slightly smaller than those on fingers; an elongate oval, inner metatarsal tubercle, and a slight tarsal fold; no outer metatarsal tubercle.

Color in life.—Head a rich bronze shade, more or less variegated from darker to lighter; dorsal surface of body a bright, velvety yellow-green; on the ventral surface the color is yellow-cream or cream. (In the smaller of the two specimens the under side of the spatulate snout is distinctly darker than in the other.) Under side of feet grayish, the under sides of the digital disks whitish.

After a year's preservation, the legs show very dim bands and the whole dorsal surface is ash gray to brown gray; the casque is darker, more or less brownish-gray.

Measurements of Diaglana spatulata (Günther) in mm.—(Measurements are of Nos. 1424 and 1423, respectively.) Snout to vent, 74, 71; length of casque, 29, 27.5; width at eyes, 22, 19; length of arm, 37.5; 36; length of leg, 87, 86; 81, 83; tibia, 28, 27; foot, 37, 35; diameter of tympanum, 3, 3; diameter of eye, 7.5, 6; width of third finger disk, 1.9, 1.8.

Remarks.—These specimens were taken under a small piece of a log on the edge of a shallow, stagnant pool. Both were crouched together, and when picked up, remained motionless.

Diaglana reticulata sp. nov.

(Plate IV, figs. 2, 2a, 2b, 2c; Plate V, fig. 1)

Type.—USNM No. 115500. Collected on the Cerro Arenal, Oaxaca, Mexico, Jan. 2, 1940, by Thomas MacDougall.

Paratype.—Amer. Mus. Nat. Hist. No. 13840, Chivela Oaxaca.

Diagnosis.—Related to *Diaglana spatulata*, but differing in having the head proportionally shorter and broader; the canthal ridges uniting farther forward and not forming a prominent nasal ridge that extends to tip of snout; skin above, granular, not smooth. The dorsal surface of body is heavily mottled with brown instead of being uniform green or olive.

Description of the type.—Head a bony casque, the skin of which is completely involved in the cranial ossification so that certain of the skull sutures are visible externally; dorsal surface roughened with small ridges or tubercles; a broad, bony ridge or "shelf" borders the sides of the head, producing anteriorly a somewhat shovel-shaped, projecting snout, the dorsal part of which is decorated with very fine, somewhat radiating ridges; thick elevated supraorbital and canthal ridges tend to enclose the depressed frontal and parietal regions; these unite between the nostrils forming a low, short, indistinct ridge; tympanum a little less than half the diameter of the eye; pupil tending to be somewhat quadrangular (although difficult to ascertain its shape in life); a postorbital ridge arches above the tympanum and connects with the very rugose ridge crossing the back part of the skull. Further skull details are shown in the figures. Eyes large, prominent, directed somewhat forward; the edge of the lateral ridges of the head are beset with tiny "teeth" or spines; these are especially conspicuous on the posterior transverse ridge.

Choanae large; vomerine teeth on two prominent triangular ridges, narrowly separated, that lie between the choanae, the teeth about on a level with or slightly behind posterior level of choanae; palatines

bearing a row of teeth; parasphenoid with an irregular, elongate patch of teeth; diastemata occur between the premaxillary series, and between the premaxillary and maxillary series of teeth; tongue broadly heart-shaped, slightly nicked behind, attached its entire length; the maxillary glands open into a sinuous groove anterior to which are two groups of several, laterally-directed minute grooves; a few rugosities (teeth) on anterior parts of the prevomers.

Skin of body lacking spines but covered, except on dorsal surface of neck (which is smooth), with fine (soft) granules which become larger on the sides; limbs with skin nearly smooth above; venter, save on chin and throat, and under surface of thigh, heavily areolate; anal flap short, narrow, the anal region surrounded by larger pustules; subanal groove distinct; posttympanic region thickened.

Arms rather thick, the toes short, with distinct terminal pads; distinct web remnant between three outer toes, forming indistinct lateral ridges on toes; tibiotarsal articulation brought forward reaching to middle of tympanum; terminal pads wider than the toes; inner metatarsal tubercle flat, small; a small outer tubercle. Other details of hands and feet indicated in the figures.

Measurements in mm.—Snout to vent, 78; width of head, 20; length of head, 28; length of snout, 14; diameter of tympanum, 2.9; diameter of eye, 6; snout projects beyond mouth, 7.5; arm, 37; leg, 88; tibia, 29; foot and tarsus, 37.

Remarks.—Very little is known regarding the habits of either this species or its related form *Diaglena spatulata*. Mr. MacDougall discovered the type ensconced in a terrestrial bromelia. One specimen of *D. spatulata* was taken in a termite nest. Two topotypic male specimens were found by me under a log at the edge of a small pool.

Both species apparently have the habit of bending the head down so that it forms an angle to the long axis of the body. Doctor Barbour (in "Reptiles and Amphibians" 1926, fig. 99) suggests that certain related genera of frogs *Tripriion*, *Corythomantis*, etc., may be phragmatic, utilizing the bony casque of the head to close the opening of a burrow. This habit may likewise be true of this genus.

The figure of *Diaglena spatulata* given by Günther in *Biologia Centrali-Americana* is, I believe, drawn from a specimen in which the terminal pads on the fingers have been dried, since the pads are shown narrower than the digits. The figure I give shows what appears to be the normal condition of the terminal pads in *D. spatulata* (drawn from a topotypic specimen).

PLATE IV

FIG. 1. *Diaglena reticulata* sp. nov. Type. U. S. N. M. No. 115500, Cerro Arenal, Oaxaca, Mexico. Dorsal view of the head. Actual length of head, 28 mm.; width of head, 20 mm.

FIG. 1a. Same, lateral view of head.

FIG. 1b. Same, under side of foot. Actual length of foot and tarsus, 37 mm.

FIG. 1c. Same, under side of hand and forearm, actual length, 32 mm.

FIG. 2. *Diaglena spatulata* (Günther). Topotype. EHT-HMS No. 1423, Presidio, Mazatlán, Sinaloa, Mexico. Head dorsal view. Actual length of head to nuchal crest, 27.5 mm.; width at eyes, 19 mm.

FIG. 2a. Same, lateral view.

FIG. 2b. Same, under surface of foot; actual length of foot and tarsus, 35 mm.

FIG. 2c. Same, under surface of hand. Actual length of hand and forearm, 28.5 mm.

PLATE IV

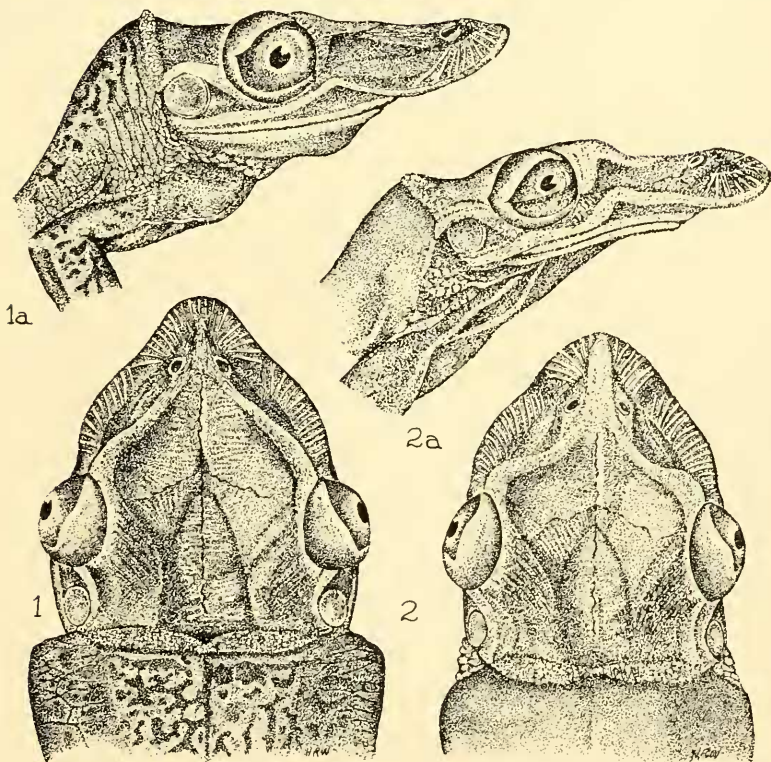
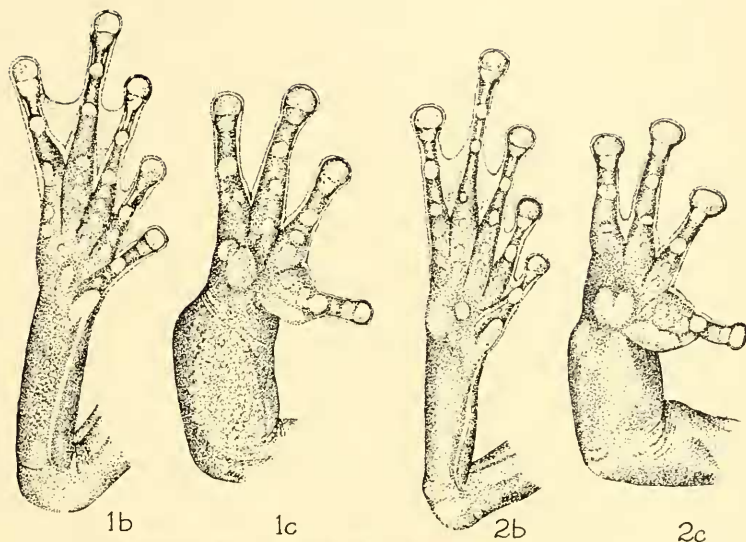


PLATE V

FIG. 1. *Diaglena reticulata* sp. nov. Type. Actual snout to vent length, 78 mm.

FIG. 2. *Diaglena spatulata* (Günther). Topotype. Presidio, 50 miles south of Mazatlán, Sinaloa, Mexico. Actual length, 74 mm.

PLATE V

